

Below, DGIF biologist Susan Watson holds a black rat snake; right, volunteers with the VHS examine aquatic species uncovered during survey work.



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# Why Do Herpers Herp?

*They're slimy;  
they slither. Some lurk;  
some hide. They're not  
warm and cuddly.*

by Glenda C. Booth

Many reptiles and amphibians evoke antipathy and fear in people. Who hasn't heard this one? "The only good snake is a dead snake."

Fortunately, prejudices like this one are dying. A new generation of kids has fallen in love with Kermit the Frog, of television's "Sesame Street." Reptiles and amphibians—

herpetofauna, or herps for short—are a link in the mosaic of life. "All species in a community are intertwined," says Dr. Edmund Brodie, University of Virginia's BFD Runk Professor of Biology. "If you pull one out, the community collapses."

"If you really understand and learn about these creatures, you find beauty you didn't even know existed," says Larry Mendoza, president of the Virginia Herpetological Society (VHS). "Once you open up your mind, once you really see them up close and personal, you'll see that all are unique."

## Herpetology

Herpetology, a branch of zoology, is the study of amphibians (frogs, toads, salamanders, and newts, for example) and reptiles (like snakes, lizards, skinks, turtles, and terrapins).

Of Greek origin, the word, "herpetology," means "knowledge of crawling things."

Often called "cold-blood animals," naturalist David Attenborough in *Life in Cold Blood* writes that it is more accurate to call reptiles and amphibians ectotherms, animals that gain their warmth from without, in contrast to endotherms, mammals like humans who generate their own warmth internally.

Why care about herps? "They are a great indicator of the health of our ecosystem. If we have a good reptile and amphibian population, chances are the overall health of the environment is good," maintains Mendoza.

An Assistant Professor of Biology at Hampden-Sydney College, Rachel Goodman, explains: "They have permeable skin and more readily exchange gases and liquids with their surrounding environment. They may spend much of their life in the water and

may also encounter pollution and acid in the soil. Because of this, they are more sensitive to changes in the environment."

Susan Watson, a terrestrial wildlife biologist with the Department (DGIF), adds that herps control pests and help maintain a natural balance. Snakes eat rodents and frogs eat bugs, for example.

## Surveying

The Virginia Herpetological Society (VHS), a 300-member organization established in 1958, has members ranging from university professors to children. VHS meets twice a year and publishes the journal, *Castebeiana*, and a bi-annual newsletter.

Members conduct several surveys a year that can attract around 50 enthusiasts. The surveys have "led us to have the largest and

most accurate data on herpetofauna of Virginia, dating back to around 1960," Mendoza comments. Fortunately, VHS shares the data with state agencies.

Why survey? Alonso Abugattas, Arlington County's natural resources manager, says, "You can't protect or manage what you don't know you have or what's in trouble."

In agreement, VHS experts trained some Dominion Power field employees to distinguish between venomous and non-venomous snakes. Commending Dominion's concern, Mendoza observes, "A lot of snakes get killed for no good reason."

## Virginia's Herpetofauna

Virginia has 72 known species of reptiles and 83 known species of amphibians. They are found in many habitats, from mountains to wetlands, from fields to forests. VHS maintains lists of known herpetofauna by jurisdiction. (See resource list at end.)

*Virginia's Wildlife Action Plan* lists 925 species of wildlife of greatest conservation need, including 19 amphibians, like the striped Southern chorus frog, Shenandoah salamander, and mudpuppy; and 29 reptiles, including the Eastern hog-nosed snake, canebrake rattlesnake, yellow-bellied slider, and Eastern box turtle. The plan's four-tiered rating system represents the degree of conservation need: critical, very high, high, and moderate.

## Threats

Goodman explains the primary threat to herps: "Habitat destruction and degradation are the number one threat worldwide and locally. We are losing native ecosystems because of development, chemical pollution, erosion, and possibly disease." Others also cite overcollection of herps for pets, especially turtles. And in some areas, there's a black market for turtles sold for food.

Climate changes loom. As temperatures warm, some southeastern species are migrating north. "We are seeing some populations like the barking treefrog and green treefrogs expanding. Green treefrogs are now documented north and west of Richmond, including recent records in Powhatan County," says Watson. This expansion might also mean the "new arrivals" will compete with those already there for limited habitat.

Virginia's unique salamanders may be a "test case." The Appalachian Mountains have the most diverse salamander population in the world, reports Watson, with three species—the Peaks of Otter, the Shenandoah, and the Big Levels salamanders—found nowhere else. The federally-endangered Shenandoah salamander has only been observed on three mountaintops in Shenandoah National Park. Because it lives only at high elevations, if the climate gets too warm and Shenandoah salamanders have to compete with the more common red-backed salamanders, they might not be able to adapt.



Mike Pinder

The Eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) is found in the mainstem and tributaries of the New River drainage and in the Clinch, Powell, and Holston rivers.



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## Virginia's Unique, Endangered Salamander

The federal- and state-endangered Shenandoah salamander (*Plethodon shenandoah*) shown here, was featured in the April 2011 issue of this magazine. Endemic and unique to Virginia, it has been seen at 3,000 feet only on three mountain peaks in Shenandoah National Park. In *Virginia's Wildlife Action Plan*, the salamander is a tier one species in critical conservation need.

DGIF's description: "This species is elongate and slender, reaching a length of 12 cm. There are 2 color phases, striped and unstriped. The striped phase is characterized by a narrow red stripe down the back, whereas the unstriped phase is uniformly dark. Reduced brassy pigmentation may be present on the dorsum of the unstriped phase. Lateral and belly pigmentation are black and white spots occur along the sides and the throat is light, but the venter is usually dark with variable amounts of white or yellow mottling. The eggs are probably deposited in a moist sheltered nest and are attended by the female, with hatching occurring in the late summer or early fall. A type of interaction exists between this species and *P. cinereus* which enables at least one of the species to affect the movements of the other. . . The food consists of insects and other invertebrates, including mollusks."

The Shenandoah salamander burrows in deep pockets of soil or crevices. Conservation measures needed include regulating human disturbance, maintaining natural vegetation, developing and maintaining habitat diversity and creating and maintaining rock piles.



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The Eastern red-backed salamander (*Plethodon cinereus*) is found in mixed forests throughout the state under rocks and leaf litter.

## Searching for Answers

Several Virginia scientists are unraveling herp mysteries. Goodman studies diseases in amphibians and reptiles in Prince Edward County. So far, she has found the BD (*Batrachochytrium dendrobatidis*) fungus in three of five frog species. This fungus, widespread across the globe, can totally decimate frogs, but she has so far not seen signs of disease or death. She's also studying ranavirus, which occurs in amphibians, reptiles, and fish. It is important to commercial and sport fishing as well as terrestrial wildlife, she says. Goodman has found it in aquatic turtles in the county and is trying to ascertain why the ranavirus is a problem at times and not at other times, considering the potential role of exposure to other stressors. For example, she's examining herbicides like Roundup and 2,4-D to see whether exposure to herbicides makes animals more susceptible to the virus.

Dr. Edmund Brodie studies snakes and salamanders near Mountain Lake. The University's Director of the Mountain Lake Biological Station, Brodie researches how garter snakes have evolved resistance to the nerve toxins of the red-spotted newts they eat. He likens it to an "arms race" between enemies. "Each side gets stronger; the more toxins that newts have, the more the snake has to resist, forcing the newt to evolve more toxins. Each side ratchets up," he explains.

His students are probing the pattern of genetic dispersal in the red-backed salamander, a two-inch-long critter that lives under rocks and only moves two meters throughout its entire life.



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The Southern leopard frog (*Lithobates sphenocephalus utricularis*) is found primarily in the Coastal Plain in ditches and swamps.

## Why Do Herpers Herp?

They slog through bogs, truck through muck, and scramble through brambles. They overturn logs, upend rocks, peek under bark, probe the leaf litter, and poke brush piles.

"Herpetologists . . . seem to have a particularly intense enthusiasm for their subject," writes Attenborough.

In Arlington, where Abugattas works, a mere two percent of the land is natural—two percent. But he finds red-backed salamanders as well as green frogs and bullfrogs, Eastern rat snakes, and painted turtles. Abugattas savors his educational role. He sees, "first the fear, then awe, then excitement, and then the thrill. What kid does not like to roll over a log and make a discovery? In an urban setting,

chances are less and less. It becomes even more important to know what we have and to show people."

He continues: "Some kids live in apartments and to them, this may be the first time in their life. It is amazing to watch the thrill when they see a little salamander or little brown snake. It's the discovery of a lifetime."

Caroline Seitz, director of Reptiles Alive, concurs. "It's like Christmas, like opening a present. You never know what amazing, awesome creature you're going to find. It sends a rush," she says.



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The Eastern chicken turtle (*Deirochelys reticularia reticularia*) is known to exist in only two locations: Isle of Wight County and First Landing State Park. The carnivorous turtle eats salamander larvae, aquatic invertebrates, tadpoles, dragonflies, and crayfish.



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The venomous canebrake rattlesnake (*Crotalus horridus*) inhabits hardwood and mixed hardwood-pine forests of southeastern Virginia. It overwinters in the base of hollow trees and stumps.

Mendoza's view: "I'm big into snakes. Just because they look different doesn't mean they are any less important or valuable. They don't fetch or respond when you call them, but they are aesthetically beautiful."

And he cites the fascination they generate. "When you go out herping, especially with kids, these are animals you can pick up, feel, and touch," he says. "Herps are great ambassadors; the animals are right there. You can hold them in your hand. Kids love it."

"People care about the things they understand. The more they understand, the

more interesting it becomes," posits Brodie. "It's exciting to tell the story about a salamander under a rock. We know that one salamander may have been under the same rock six to eight years. When people begin to understand that, they think twice before driving a bulldozer through an area." ❧

Glenda C Booth, a freelance writer, grew up in Southwest Virginia and has lived in Northern Virginia over 30 years, where she is active in conservation efforts.

## RESOURCES

*A Guide to the Frogs and Toads of Virginia:* [www.dgif.virginia.gov/](http://www.dgif.virginia.gov/) Scroll down to red box for online store

*A Guide to the Snakes of Virginia:* [www.dgif.virginia.gov/](http://www.dgif.virginia.gov/) Scroll down to red box for online store

*A Guide to the Turtles of Virginia*, to be published by DGIF, 2013.

Species Lists, Amphibians: [www.dgif.virginia.gov/wildlife/information/?t=1](http://www.dgif.virginia.gov/wildlife/information/?t=1)

Species Lists, Reptiles: [www.dgif.virginia.gov/wildlife/information/?t=3](http://www.dgif.virginia.gov/wildlife/information/?t=3)

Species List by Virginia Jurisdiction: [www.virginiaherpetologicalsociety.com/county/county-herps.htm](http://www.virginiaherpetologicalsociety.com/county/county-herps.htm)

## HOW TO HELP HERPS

- Use fewer fertilizers, pesticides and herbicides. Visit: [www.northeastparc.org/products/pdfs/NEPARC\\_backyard.pdf](http://www.northeastparc.org/products/pdfs/NEPARC_backyard.pdf) or for frogs: [www.fws.gov/contaminants/documents/Homeowners\\_Guide\\_Frogs.pdf](http://www.fws.gov/contaminants/documents/Homeowners_Guide_Frogs.pdf)
- Volunteer for surveys. Visit: [www.virginiaherpetologicalsociety.com/Conservation/vhs-conservation.htm](http://www.virginiaherpetologicalsociety.com/Conservation/vhs-conservation.htm) and the Virginia Frog and Toad Calling Survey: [www.dgif.virginia.gov/wildlife/frogsurvey/](http://www.dgif.virginia.gov/wildlife/frogsurvey/)
- Report Eastern box turtles sightings: [www.virginiaherpetologicalsociety.com/reptiles/turtles/eastern-box-turtle/boxturtle-reporting/boxturtle-reporting-form.htm](http://www.virginiaherpetologicalsociety.com/reptiles/turtles/eastern-box-turtle/boxturtle-reporting/boxturtle-reporting-form.htm)
- Help monitor frogs: [www.aza.org/become-a-frogwatch-volunteer/](http://www.aza.org/become-a-frogwatch-volunteer/)
- Support citizen science and conservation: <http://bewildvirginia.org/help/>